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| 10/643,266      | 08/19/2003  | Phillip C. Harris    | 2003-IP-009898U1    | 4630             |

7590 04/28/2005

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| EXAMINER |
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SMITH, MATTHEW J

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| ART UNIT | PAPER NUMBER |
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3672

DATE MAILED: 04/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/643,266

Applicant(s)

HARRIS ET AL.

Examiner

Matthew J. Smith

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 44-46 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 7, 12, 13, 15, 16, 18-30, 35, 36 and 38-43 is/are rejected.
- 7) ☒ Claim(s) 5, 8-11, 14, 17, 31-34, and 37 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 21-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Funkhouser et al. (2004/0211568).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Funkhouser et al. disclose a method of fracturing a subterranean zone penetrated by a well bore having a temperature up to and above 400 degrees Fahrenheit comprising pumping a viscous aqueous foamed fracturing fluid into the subterranean zone at a rate and pressure sufficient to fracture the zone the fluid comprising: water; a terpolymer of 60 weight % of 2-acrylamido-2-methylpropane-sulfonic acid, 39.5 weight % of acrylamide and 0.5 weight % of acrylic acid present in the foamed fracturing fluid in an amount of about 0.75% by weight of the water; carbon

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dioxide present in the foamed fracturing fluid in an amount of from about 20% to about 70% by volume of the foamed fracturing fluid, a cocoamidopropyl betaine foaming agent present in the foamed fracturing fluid in an amount of about 0.6% by weight of the water; a sodium bromate viscosity breaker in the fluid in an amount of about 0.35% by weight of the water; the foamed fracturing fluid is a tetrakis(triethanolaminate)zirconium(IV) cross-linking agent present in the foamed fracturing fluid in an amount of about 0.5% by weight of the water; and the foamed fracturing fluid is an acetic acid-acetate buffer present in the fluid in an amount of about 0.5% by weight of the water.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 6, 7, 12, 13, 24, 25, 29, 30, 35, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stahl et al. (4951921) in view of Mitchell et al. (6242390).

Stahl et al disclose a method of fracturing (col. 5, line 34) a subterranean zone penetrated by a well bore having a temperature up to 400 degrees F (col. 12, line 41)

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comprising pumping a viscous aqueous foamed fracturing fluid into the subterranean zone at a rate and pressure sufficient to fracture the zone, the fluid comprising salt water (col. 22, line 22), a water viscosity increasing terpolymer of 2-acrylamido-2-methylpropane-sulfonic acid (col. 20, lines 3-4), acrylamide (col. 16, line 30) and acrylic acid (col. 34, line 32), carbon dioxide (col. 1, lines 65-66), a foaming agent (col. 2, line 10) but not a viscosity breaker for effecting a controlled reduction in the viscosity of the fracturing fluid.

Mitchell et al. present sodium bromate breaker (col. 6, lines 23-24) in encapsulated form (col. 21, line 53) used to reduce the viscosity during cleaning up a fracturing fluid.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to add a viscosity breaker to the Stahl et al composition, as presented by Mitchell et al., in order to recover the fracturing fluid (Mitchell et al., col. 1, lines 37-38).

Claims 3, 4, 15, 16, 18-20, 26-28, and 38-43 are rejected under 35 U.S.C. 103(a) as being obvious over Stahl et al. in view of Mitchell et al. as applied to claims 1 and 24, respectively and further in view of Funkhouser et al.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome

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by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

The combination discloses a method of fracturing (col. 5, line 34) a subterranean zone penetrated by a well bore having a temperature up to 400 degrees F (col. 12, line 41 comprising pumping a viscous aqueous foamed fracturing fluid into the subterranean zone at a rate and pressure sufficient to fracture the zone, the fluid comprising salt water (col. 22, line 22), a water viscosity increasing terpolymer of 2-acrylamido-2-methylpropane-sulfonic acid (col. 20, lines 3-4), acrylamide (col. 16, line 30) and acrylic acid (col. 34, line 32), carbon dioxide (col. 1, lines 65-66), a foaming agent (col. 2, line 10) and a viscosity breaker for effecting a controlled reduction in the viscosity of the fracturing fluid but not the acrylamido-2-methylpropane-sulfonic acid present in the

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terpolymer in an amount in the range of from about 15 weight % to about 80 weight %, the acrylamide present in an amount in the range of from about 20 weight % to about 85 weight % and the acrylic acid or salts present in an amount of from about 0.1 weight % to about 10 weight %, the 2-acrylamido-2-methylpropane-sulfonic acid present in the terpolymer in an amount of about 60 weight %, the acrylamide present in an amount of about 39.5 weight %, the acrylic acid or salts thereof present in an amount of about 0.5 weight %, the terpolymer present in the foamed fracturing fluid in an amount in the range of from about 0.2% to about 2.0% by weight of the water, a cross-linking agent selected from the group consisting of titanium(IV)(triethanolaminate)-isopropoxide, tetrakis(triethanolaminate)- zirconium(IV) and hafnium(IV)acetylacetonate, a buffer for maintaining the pH of the fracturing fluid in the range of from about 4 to about 6, a buffer an acetic acid-acetate buffer, or the buffer present in the foamed fracturing fluid in an amount in the range of from about 0.1% to about 1.0% by weight of the water.

Funkhouser et al. disclose the acrylamido-2-methylpropane-sulfonic acid is present in the terpolymer in an amount in the range of from about 15 weight % to about 80 weight %, the acrylamide present in an amount in the range of from about 20 weight % to about 85 weight % and the acrylic acid or salts present in an amount of from about 0.1 weight % to about 10 weight %, the 2-acrylamido-2-methylpropane-sulfonic acid present in the terpolymer in an amount of about 60 weight %, the acrylamide present in an amount of about 39.5 weight %, the acrylic acid or salts present in an amount of about 0.5 weight %, the terpolymer present in the foamed fracturing fluid in an amount in the range of from about 0.2% to about 2.0% by weight of the water, a cross-linking

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agent selected from the group consisting of titanium(IV)(triethanolaminate)-isopropoxide, tetrakis(triethanolaminate)- zirconium(IV) and hafnium(IV)acetylacetonate, a buffer for maintaining the pH of the fracturing fluid in the range of from about 4 to about 6, the buffer an acetic acid-acetate buffer, the buffer present in the foamed fracturing fluid in an amount in the range of from about 0.1% to about 1.0% by weight of the water.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to add the amounts disclosed by Funkhouser et al. in the combination in order to improve the fracture.

***Allowable Subject Matter***

Claims 44-46 are allowed.

Claims 5, 8-11, 14, 17, 31-34, 37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Smith whose telephone number is 703-305-5135 or 571-272-7034. The examiner can normally be reached on T-F, 9-4.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David J. Bagnell can be reached on 703-308-2151 or 571-272-6999. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David Bagnell  
Supervisory Patent Examiner  
Art Unit 3672

MJS *MJS*  
23 March 2005